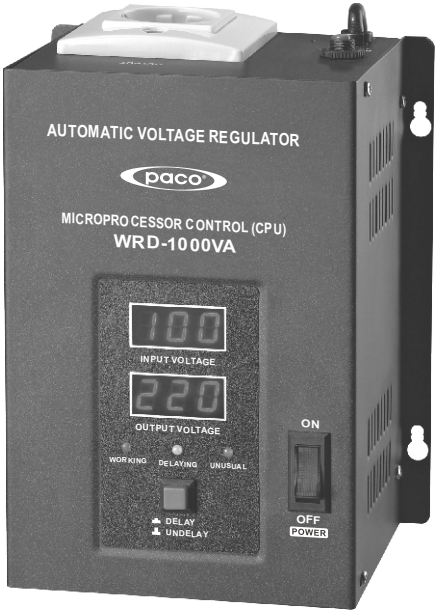
MICROPROCESSOR CONTROL (CPU)

AUTOMATIC VOLTAGE REGULATOR

AVR & BYPASS FUNCTION



Instruction Manual

Please read user manual carefully before use.

CE

1. FEATURES

- Microprocessor Control (CPU)
- Wall-Mounted AVR
- AVR & Bypass Function(3000VA,5000VA)
- Display: input and output voltage digital display
- Wide range voltage regulation.
- Automatically executes protection. when protection finished, goes off.
- High voltage protection: Yes
- Low voltage protection: Yes
- High temperature protection: Yes
- Overload protection: Yes
- Circuit protection: circuit breaker
- Smart cooling system: Yes(3000VA,5000VA)

2. DESCRIPTION

FIG 1 **Front Panel: 1000-2000VA**

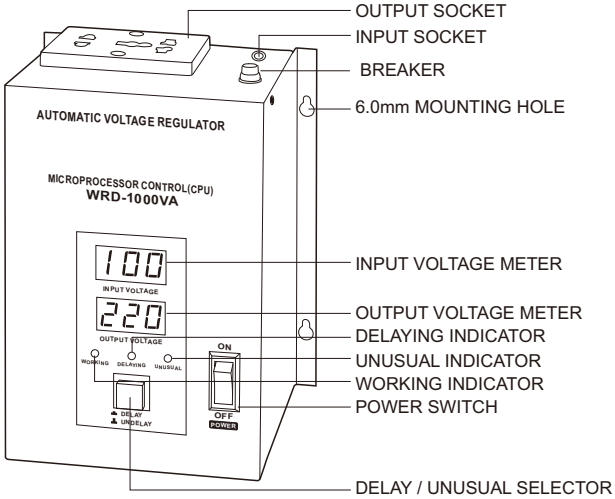


FIG 2 **Front Panel: 3000-5000VA**

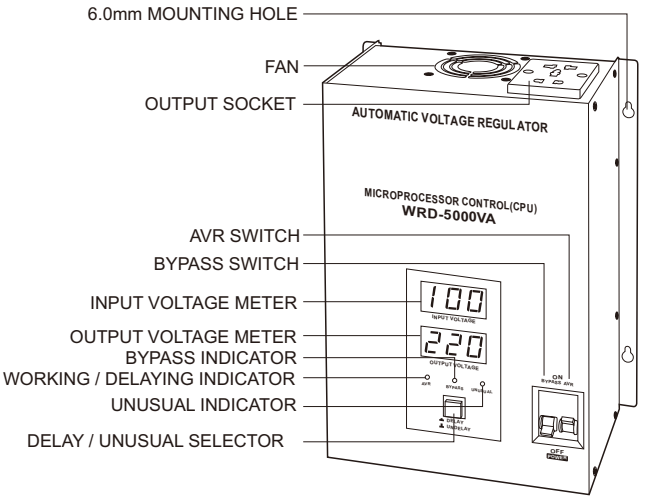
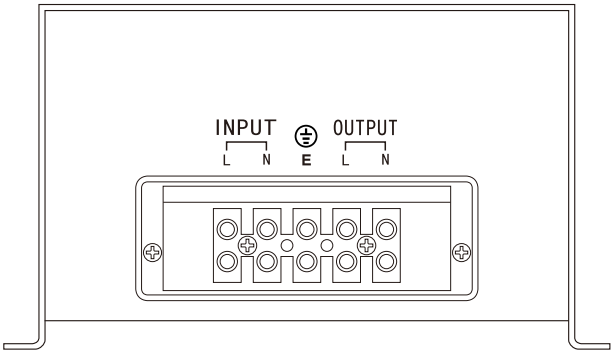


FIG 3 **Rear Panel: 3000VA-5000VA**



3. INDICATING SIGN

(1). ONLY FOR 1000VA-2000VA MODEL

WORKING

WHEN THE GREEN INDICATOR IS LIGHTED. THE REGULATOR IS WORKING.

DELAYING

WHEN ORANGE INDICATOR IS FLASHING EVERY ONE SECOND, THE SYSTEM IS TURNING INTO DELAYING STATE, AND THE REGULATOR HAS NO OUTPUT.
AFTER DELAY, ORANGE INDICATOR WILL EXTINGUISH AND THE REGULATOR RESUME OUTPUT.

UNUSUAL

WHEN THE RED INDICATOR IS FLASHING EVERY ONE SECOND, THE SYSTEM IS TURNING INTO INPUT LOW VOLTAGE PROTECTION AND INPUT HIGHT VOLTAGE PROTECTION.
WHEN THE RED INDICATOR IS CONTINUOUSLY ILLUMINATING, THE SYSTEM IS TURNING INTO OUTPUT HIGH VOLTAGE PROTECTION.

WHEN AVR TEMPERATURE IS HIGHER THAN THE SET-POINT TEMPERATURE ,THE UNIT WILL AUTOMATICALLY TURN INTO PROTECTION STATE, RED INDICATOR WILL FLASH EVERY ONE SECOND AND OUTPUT SHUTDOWN.
WHILE TEMPERATURE IS LOWER THAN SET-POINT TEMPERATURE, LED LIGHT WILL EXTINGUISH, THE UNIT RECOVER TO WORK AUTOMATICAH.

NOTE: Indication for overload features is not equipped in standard configuration. This function should be effective only after users notify manufacturer in advance.

(2). ONLY FOR 3000VA-5000VA MODEL

AVR

WHEN AVR GREEN LED INDICATOR IS FLASHING EVERY ONE SECOND, THE SYSTEM IS TURNING INTO DELAY STATE, THE REGULATOR HAS NO OUTPUT, AFTER DELAY, AVR GREEN LED INDICATOR ILLUMINATES SOLID AND OUTPUT RESUMES, THE REGULATOR ENTER NORMAL WORKING STATE.

BYPASS

WHEN BYPASS YELLOW LED INDICATOR ILLUMINATES, THE SYSTEM ENTER INTO BYPASS MODE, THE PRODUCT HAS NO AVR FUNCTION.

UNUSUAL

1: WHEN OUTPUT VOLTAGE OF AVR IS HIGHER THAN SET VALUE, THE SYSTEM ENTER INTO HIGH & LOW VOLTAGE PROTECTION, UNUSUAL RED LED FLASHES EVERY ONE SECOND AND OUTPUT GOES OFF.WHEN OUTPUT VOLTAGE OF AVR IS UNDER SET VALUE, THE SYSTEM ENTER NORMAL WORKING STATE,UNUSUAL RED LED EXTINGUISHES.

2: WHEN TEMPERATURE OF AVR IS HIGHER THAN SET TEMPERATURE, THE SYSTEM ENTER INTO TEMPERATURE PROTECTION, UNUSUAL RED LED FLASHES EVERY ONE SECOND AND OUTPUT GOES OFF.WHEN TEMPERATURE OF AVR ARE LOWER THAN SET TEMPERATURE, THE SYSTEM ENTER INTO NORMAL WORKING STATE, UNUSUAL RED LED EXTINGUISHES.

3: WHEN AVR USING UNDER OVERLOAD,THE SYSTEM ENTER INTO OVERLOAD PROTECTION, UNUSUAL RED LED FLASHES VALUE ONE SECOND AND OUTPUT GOES OFF.

WHEN THE LOAD IS UNDER SET VALUE, THE SYSTEM ENTER INTO NORMAL WORKING STATE, UNUSUAL RED LED EXTINGUISHES.

NOTE: Indication for overload features is not equipped in standard configuration. This function should be effective only after users notify manufacturer in advance.

4. LED INDICATOR ILLUSTRATION

(1). ONLY FOR 1000VA-2000VA MODELH

LED Indicator Illustration			
CONDITION	**WORKING-G**	**DELAYING-Y**	**UNUSUAL-R**
Power Off	—	—	—
Working	¤	—	—
Delay Output	¤	☆	—
Input high voltage protection	¤	—	☆
Input low voltage protection	¤	—	☆
Output high voltage protection	¤	—	¤
High temperature protection	¤	—	☆

NOTE: ¤ : SOLID ☆ : FLASH — : EXTINGUISH

(2). ONLY FOR 3000VA-5000VA MODELH

LED Indicator Illustration			
CONDITION	**AVR**	**BYPASS**	**UNUSUAL**
Power Off	—	—	—
Delay state(power on)	☆	—	—
Normal state	¤	—	—
Bypass state	—	¤	—
Output high voltage protection	¤	—	☆
Output low voltage protection	¤	—	☆
High temperature protection	¤	—	☆
Overload protection	¤	—	☆

NOTE: ¤ : SOLID ☆ : FLASH — : EXTINGUISH

5. LED DIGITAL DISPLAY INDICATOR ILLUSTRATION

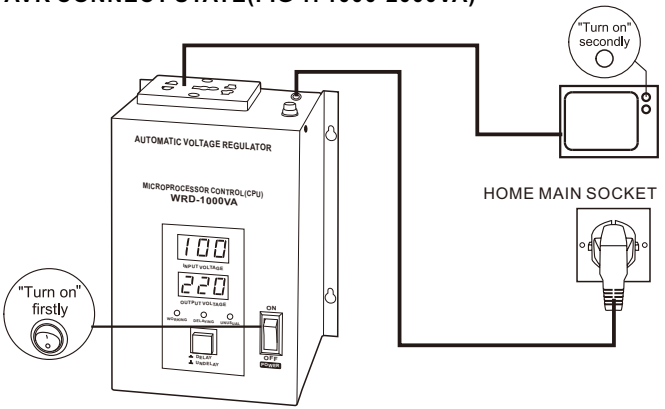
LED Digital Display Indicator Illustration		
CONDITION	INPUT DISPLAY INDICATOR	OUTPUT DISPLAY INDICATOR
Power Off	Extinguish	Extinguish
Working	Input Voltage	Output Voltage
Delay Output	Voltage at low-voltage protection (selective)	Countdown (selective)
Output high voltage protection	“HHH” （Flash）	“U-P”
Output low voltage protection	“LLL” （Flash）	“U-P”
High temperature protection	“FOH”	“F-P”
Overload protection (CT Mode)	“COH”	Delay Countdown
Bypass Mode	Input Voltage	Output Voltage

6. OPERATION

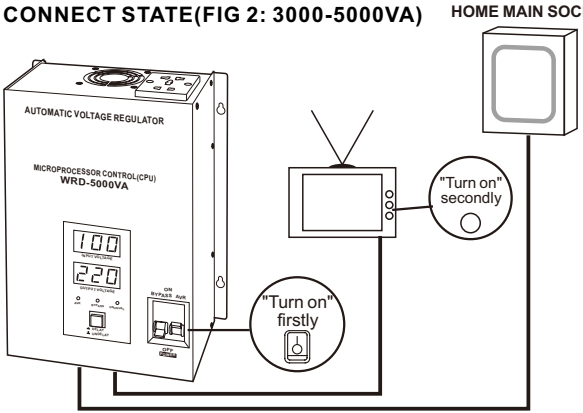
- Before use, please make sure the voltage and power of the appliance are accord with the labeled power and specification of the unit to avoid any damage.
- Please connect the appliance before turning on the unit. Switch on appliance after you make sure the unit is working normally with output voltage.
- When connecting the electrical appliance with motor or compressor, such as drill, air-conditioner and so on to the automatic voltage regulator, please make sure that the power rating of the automatic voltage regulator is at least 3 times of the power rating of the electrical appliance, so that it can work smoothly, because the starting up power is much beyond of the power rating of the electrical appliance.

- Output Delay: Delay time 6 seconds (DEFAULTED) and 180 seconds (MANUAL SWITCH) are alternative.

AVR CONNECT STATE(FIG 1: 1000-2000VA)

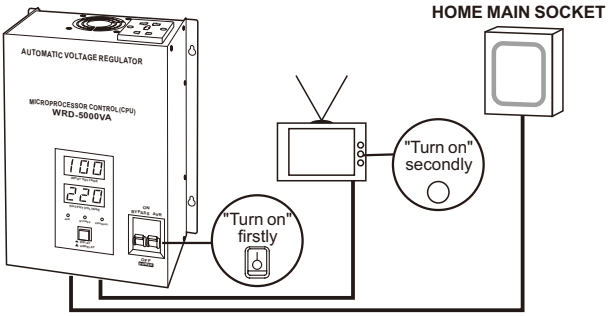


AVR CONNECT STATE(FIG 2: 3000-5000VA)



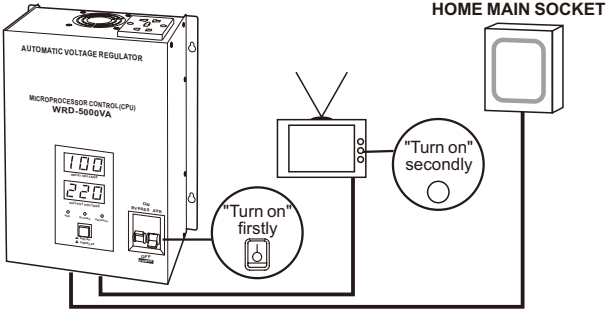
NOTE: DELAY only take effect when the system is restarted into normal.

AVR & BYPASS CONNECT STATE (FIG 3: 3000-5000VA)



1. When the avr and bypass switch are in the "no" state, The avr gives priority to the steady state.
2. When the avr fails under using, the avr automatically into a bypass state to avoid effecting the use of the appliance.
3. Bypass output is without avr function.

BYPASS CONNECT STATE (FIG 4: 3000-5000VA)



- **Bypass function**

1. When the unit does not use for long time or leave unattended, you can choose bypass function.
2. When the unit fails under using,you can choose bypass function to avoid effecting the use of the appliance.
3. Bypass output is without avr function.

7. LOW & HIGH VOLTAGE PROTECTION

- When output voltage is lower or higher than labeled voltage, AVR will turn into self-protection state automatically ,the UNUSUAL RED indicator flashes every one second and output voltage will be cut off.

ONLY FOR 1000VA-2000VA MODEL

- When input voltage comply with labeled voltage, AVR will go into automatic recovering state, the UNUSUAL RED indicator extinguishes. Then DELAYING ORANGE indicator flashes every one second, the system goes into delaying state. After delay, DELAYING ORANGE indicator extinguishes and output voltage resume.

ONLY FOR 3000VA-5000VA MODEL

- When output voltage comply with labeled voltage, AVR will go into automatic recovering state, the UNUSUAL RED indicator extinguishes. Then AVR (DELAYING) GREEN indicator flashes every one second, the system goes into delaying state. After delay, AVR (DELAYING) GREEN indicator extinguishes and output voltage resume.

8. THERMAL PROTECTION

- When the temperature of the transformer exceeds 130℃+/-5% , the system will automatically turn into self-protection state, UNUSUAL RED indicator will flash every one second and output voltage shut down. While temperature is lower 70℃+/-5% , the system will recover automatically. UNUSUAL RED indicator will extinguish, and output resume.

9.OVERLOAD PROTECTION

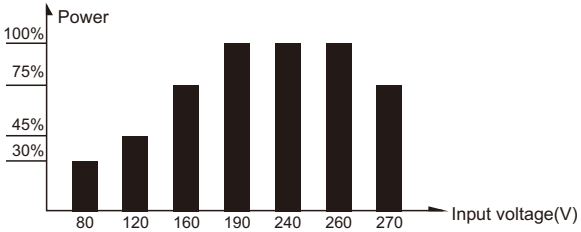
- When AVR is overload, the system will turn into self-protection, red LED indicator will flash every one second and there is no output. To resume the output, you should lessen the load and then restart the unit.
  NOTE: Indication for overload features is not equipped in standard configuration. This function should be effective only after users notify manufacturer in advance.

10. WITH COOLING FAN

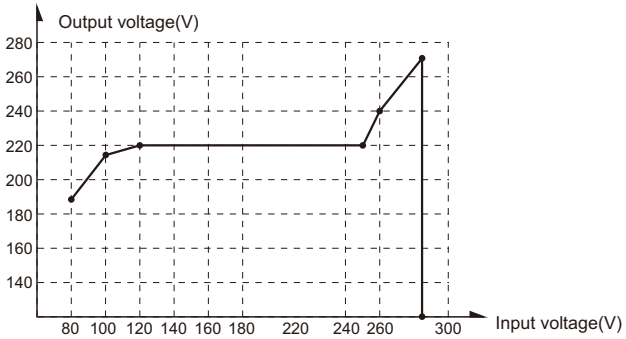
- When the temperature of transformer excessed 65℃+/-5%, the cooling fan will switch on automatically to low down inside temperature and will stop working while the temperature comes down.
  NOTE: This function only suitable for 3KVA / 5KVA.

11. OUTPUT CAPACITY

- The automatic voltage regulator will switch off automatically if the total wattage of the electrical appliances exceed the automatic voltage regulator output capacity.
- If this voltage is in the range of 190-250V, the regulator provides the 100% listed maximum output power. The maximum output power will change as the curve shown below.



Loading capability diagram



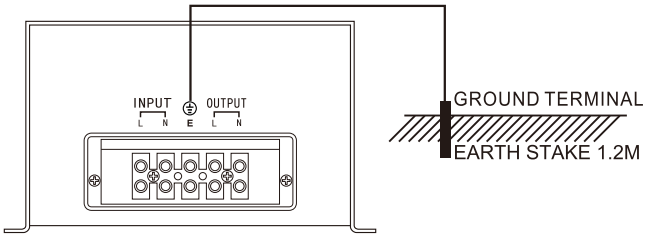
Input / output voltage diagram

12. GROUNDING CONNECTION

WARNING: BEFORE USING THIS AUTOMATIC VOLTAGE REGULATOR YOU MUST PROVIDE A GROUND CONNECTION TO THE AUTOMATIC VOLTAGE REGULATOR.

- On the rear panel of the automatic voltage regulator is a terminal fitted with a nut. This terminal is connected to the case of the automatic voltage regulator and also to the earth terminal of the AC output socket. The use of this terminal will depend on your particular installation. In any installation, heavy duty, green-insulated wire should be used for this connection.

profile panel



In a stationary land based installation, the earth terminal should be connected to a metal earthing stake driven into the ground to a depth of 1.2m or more.

NOTE: The earth terminal of the AC outlet is connected to the neutral terminal.
This is the same as a standard household power point where the neutral line is bonded to earth and there is normally no voltage between them.

13.CAUTION

- In case of trouble with the AC output, e.g.short-circuit, overload, etc... the protection circuit will automatically cut off the output.
  In such cases:
  (A) switch off the power at once
  (B) disconnect all units
  (C) check the connected devices
  (D) use the unit again unless the problems concerning the connected devices have been solved
- When in use for a prolonged period of time, the AC output may suddenly be cut off although the input voltage normal, This may be caused by excessive temperatures. If this happens. Please proceed as follows:
  (A) Switch off the automatic voltage regulator at once
  (B) Disconnect some of the appliances or wait until the automatic voltage regulator cools off
  (C) Switch the automatic voltage regulator back on

- Always keep the automatic voltage regulator in an environment which is:
  (A) Well-ventilated
  (B) Not exposed to direct sunlight or any other heat source
  (C) Inaccessible to children
  (D) Safe from water/moisture, oil or grease
  (E) Safe from any flammable substance

WARNING: DO NOT DISASSEMBLE THE UNIT. HAZARDOUS VOLTAGE! DANGER! PLEASE RETURN TO THE DEALER IF YOU FIND ANY PROBLEM WITH THE UNIT

14. MAINTENANCE

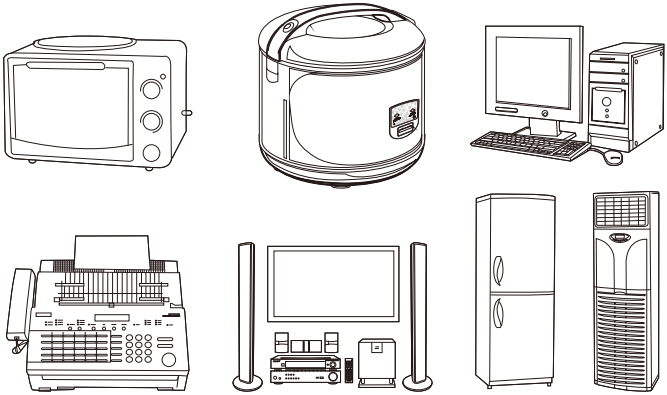
- Very little maintenance is required to keep your automatic voltage regulator operating properly.

- You should clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt. At the same time, tighten the screws on the AC input terminals.

15. EXPERT OF PROTECTOR FOR

- Make sure that the total power does not exceed the listed maximum output power of the regulator.
  Be sure to connect the ground point to the ground for your safety.

Expert of Protector For:



16. SPECIFICATION

P/No.	WRD-1000VA	WRD-1500VA	WRD-2000VA
Output Power	1000VA	1500VA	2000VA
Technology	CPU based Digital Circuit		
Input Voltage	☐ 100-260V~ ☐ 120-260V~ ☐ 140-260V~ ☐ 80-140V~		
Input Frequency	50/60Hz		
Output Voltage	☐ 220V~ ☐ 230V~ ☐ 240V~ ☐ 120V~		
Output Precision	+/-10%		
Efficiency	98%		
Phase Single	Single Phase		
High Voltage Protection	Yes		
Low Voltage Protection	Yes		
Overload Protection	Yes		
Thermal Protection	Yes		
High Output Voltage Protection	255V～		
Circuit Protection	breaker		
LED Digital Display Status	Input Voltage/Output Voltage		
Circuit breaker	250V AC, 8A	250V AC, 10A	250V AC, 15A
Delay Time	6 secs / 180 secs		
Ambient temperature	-20℃ to +50℃, output power is reduced automatically at high temperatures		
Operating Temperature	0~40℃		
Storage Temperature	-15℃~45℃		
Operating Relative Humidity	10%RH~102%RH		
Inner Box (L×W×H)	225x165 x122 mm		

* specification are subjected to change without prior notice.

16. SPECIFICATION

P/No.	WRD-3000VA	WRD-5000VA
Output Power	3000VA	5000VA
Technology	CPU based Digital Circuit	
Input Voltage	☐ 100-260V~ ☐ 120-260V~ ☐ 140-260V~ ☐ 80-140V~	
Input Frequency	50/60Hz	
Output Voltage	☐ 220V~ ☐ 230V~ ☐ 240V~ ☐ 120V~	
Output Precision	+/-10%	
Efficiency	98%	
Phase Single	Single Phase	
High Voltage Protection	Yes	
Low Voltage Protection	Yes	
Overload Protection	Yes	
Thermal Protection	Yes	
High Output Voltage Protection	255V～	
Bypass Function	Yes	
Circuit Protection	Air switch	
LED Digital Display Status	Input Voltage/Output Voltage	
Circuit breaker	2×16A	2×25A
Cooler Fan	Automatic temperature controlled	
Delay Time	6 secs / 180 secs	
Ambient temperature	-20℃ to +50℃, output power is reduced automatically at high temperatures	
Operating Temperature	0~40℃	
Storage Temperature	-15℃~45℃	
Operating Relative Humidity	10%RH~102%RH	
Inner Box (L×W×H)	370x270 x150mm	

* specification are subjected to change without prior notice.

CAUTION

- Avoid overloading
  Do not use the regulator beyond its maximum power.

- When connected to any appliance with built-in motor compressor, the starting power is generally several times of the appliance's listed power rating. Make sure that the total starting power capacity of all connected appliance does not exceed the listed maximum output power of the regulator. For color TV, calculate it twice as its listed capacity.

- Make sure that the regulator is of the same output voltage and frequency as the appliance's it connected.

- Make sure that the voltage of electrical source is within the listed range of the input voltage of the regulator.

- Always place the regulator in an environment that is:
  (A) Well ventilated.
  (B) Not exposed to direct sunlight or heat source.
  (C) Out of reach from children.
  (D) Away from water， moisture ， oil or grease.
  (E) Away from any flammable substance.